# NR-12 Reduced Reheat

# Current Title 24 Reheat Exceptions

- For non-DDC (direct digital control) systems
  - Reduces min VAV airflow to 30%

Single Max.

- For DDC systems
  - Reduces reheat/recool to 20% in deadband
  - Allows reheat/recool to 50% at peak heating

Dual Max.

- In both cases, the minimum can be increased to meet the zone ventilation requirements

# Proposed T24-2013 Reheat Language

EXCEPTION 1 to Section 144(d): Zones served by variable air-volume systems that are designed and controlled to reduce, to a minimum, the volume of reheated, re-cooled, or mixed air supply are allowed only if the controls meet the following requirements:

A. For each zone with direct digital controls (DDC):

1. The volume of primary air that is reheated, re-cooled, or mixed air supply shall not exceed the larger of:

a. 50 percent of the peak primary airflow, or

b. The design zone outdoor airflow rate per Section 121.

2. The primary airflow in the deadband shall not exceed the larger of:

a. 20 percent of the peak primary airflow; or

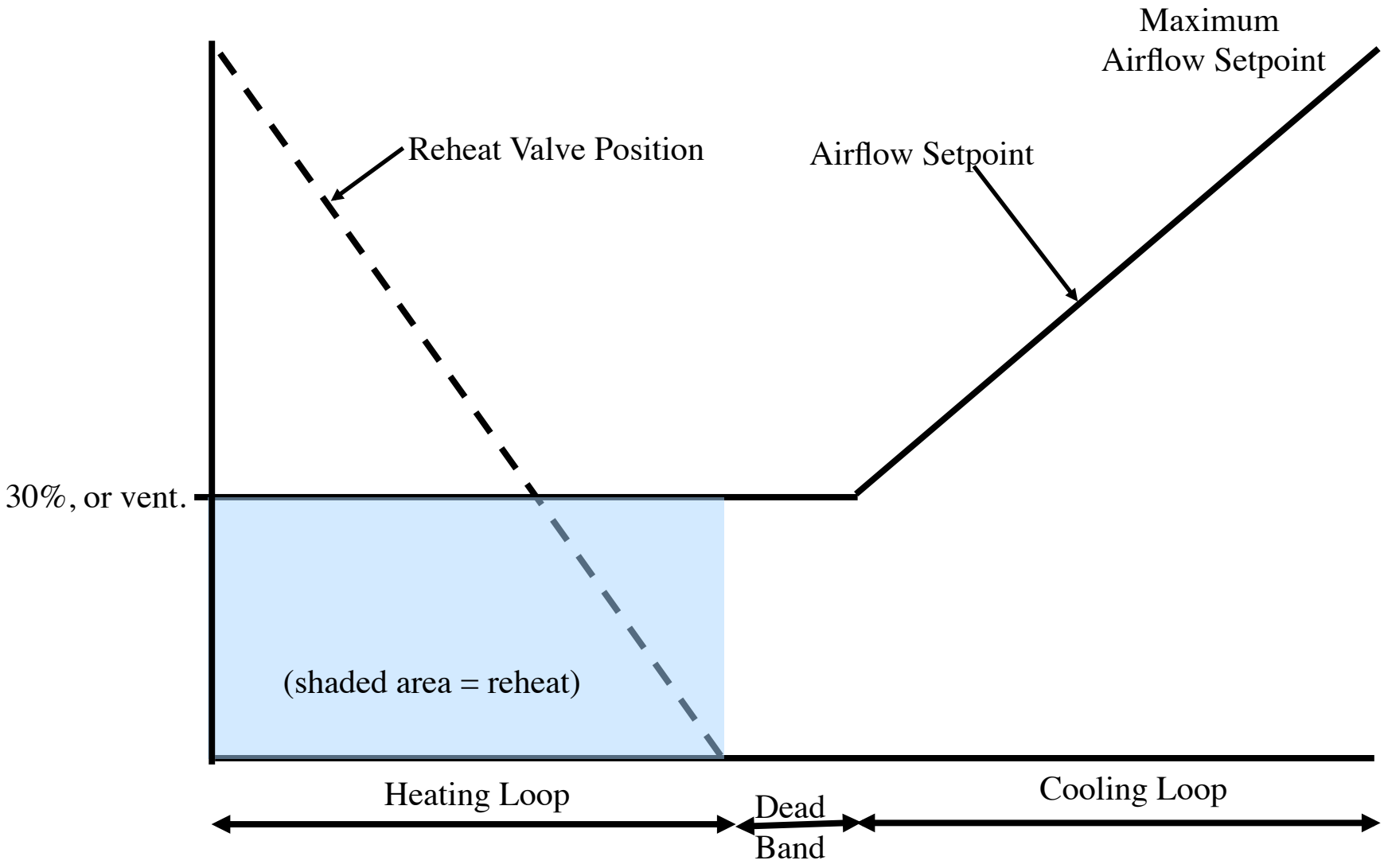
b. The design zone outdoor airflow rate per Section 121.

~~3. Airflow between deadband and full heating or full cooling must be modulated~~

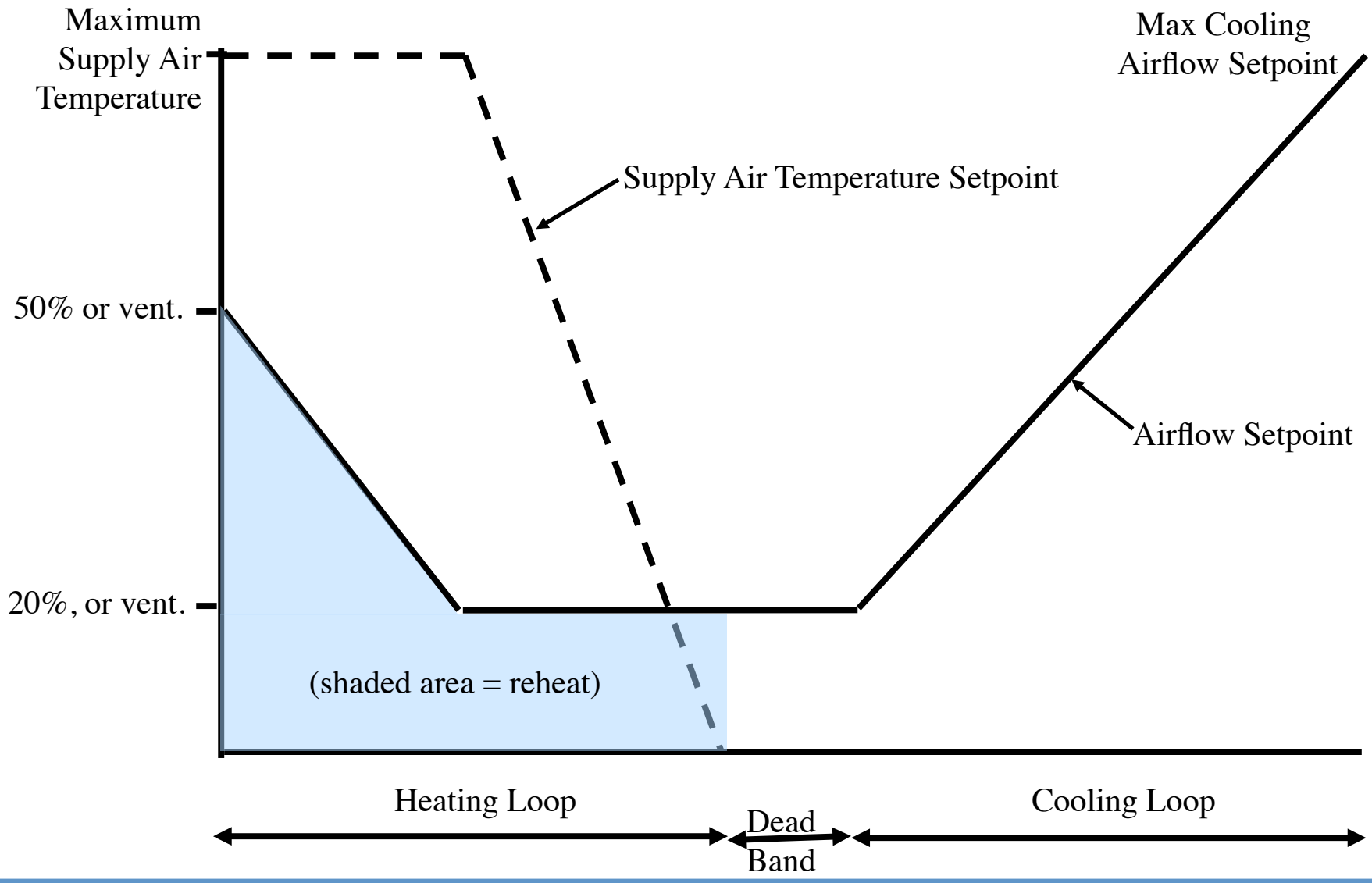
3. The first stage of heating consists of modulating the zone supply air temperature setpoint up to a maximum setpoint while the airflow is maintained at the deadband flow rate.

4. The second stage of heating consists of modulating the airflow rate from the deadband flow rate up to the heating maximum flow rate.

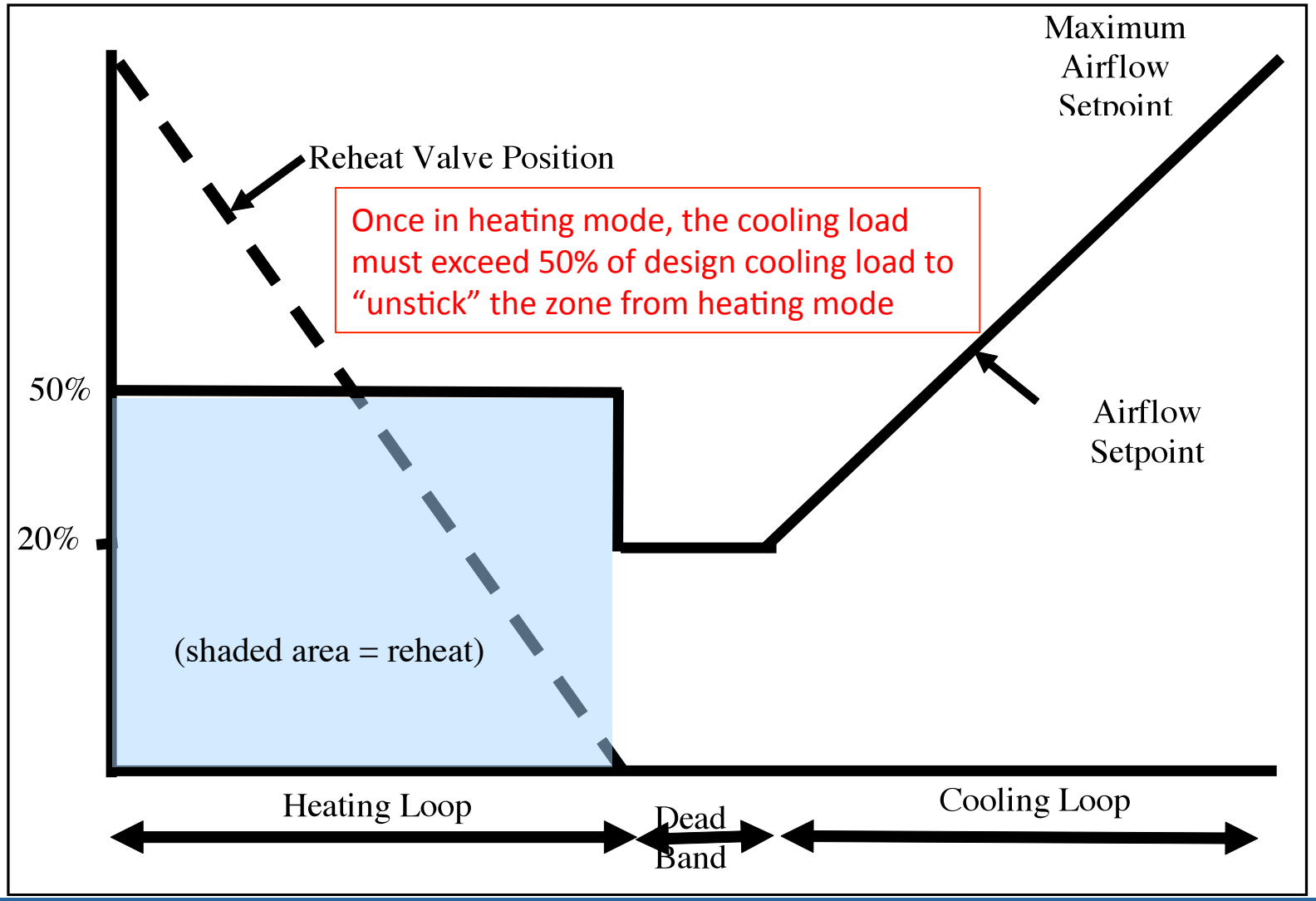
# 30% Single Max – Only Allowed for Pneumatics



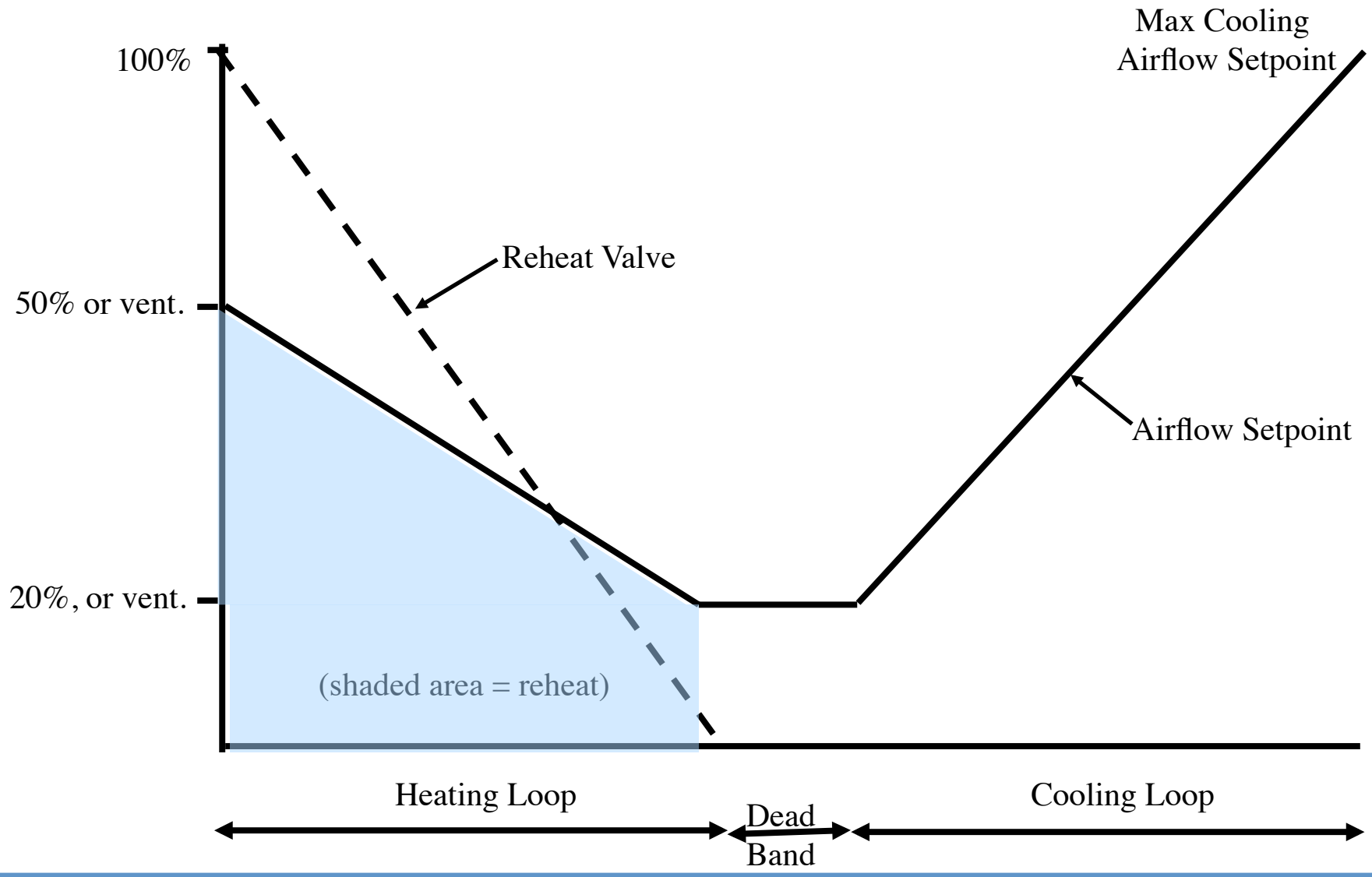
# Dual Max / Temperature First – Most Efficient



# Dual Max/Constant Volume Heat – NOT ALLOWED!



# Dual Max / Simultaneous - To be prohibited in T24-2013



# Lifecycle Cost Analysis

- Incremental cost: $75/zone for discharge air temperature sensor per Bay Area controls contractors
- Cost effective for 1000 $ft^2$ zone in all 16 climate zones
- Analysis only accounts for boiler and fan energy savings, not for pump and cooling energy savings for simplicity